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Studies on the Terrestrial Isopod Crustaceans in Japan
VII. Supplements to the Taxonomy-3

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日本産陸棲等脚目甲殻類の研究
Ⅶ. 分類補遺—その3

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第Ⅶ報では，補遺の第3回目として南日本各地、とりわけ、1991年度における琉球列島及び紀伊半島における採集品を調査した成果から、ヒゲナガワラジムシ科、ミギワワラジムシ科、ヒメワラジムシ科、トウヨウワラジムシ科、ワラジムシ科及びコシビロダンゴムシ科の10種類について補遺として追加記載する。なお、今回の調査は水産無脊椎動物研究所からの研究費による「海産等脚類の分類学的研究」の一環として行われたものであり、海産等脚目の調査の際の採集品が主であるので、潮間帯や海岸林に生息する種類が多く含まれる。

ヒゲナガワラジムシ科	Olibrinidae
ヒゲナガワラジムシ属	*Olibrinus*
クシモトヒゲナガワラジムシ	*Olibrinus kushimotoensis* n.sp.
ミギワワラジムシ科	Marinoniscidae
ミギワワラジムシ属	*Marinoniscus*
コスゲヒゲナガワラジムシ	*Marinoniscus kosugei* n.sp.
イリエミギワワラジムシ	*Marinoniscus aestuari* n.sp.
ノムラミギワワラジムシ	*Marinoniscus nomurai* n.sp
ヒメワラジムシ科	Philloscіidae
ミナミワラジムシ属	*Papuaphiloscia*
ヤンバルミナミワラジムシ	*Papuaphiloscia terukubiensis* n.sp.
トウヨウワラジムシ科	Trachelipidae
ハヤシワラジムシ属	*Nagurus*
ヤンバルハヤシワラジムシ	*Nagurus kunigamiensis* n.sp.
オキナワハヤシワラジムシ	*Nagurus okinawaensis* n.sp.
ワラジムシ科	Porcellionidae

Contributions from the Toyama Science Museum, No.113

チョビヒゲワラジムシ属	*Leptotrichus*
ヤエヤマチョビヒゲワラジムシ	*Leptotrichus chobihige* n.sp.
コシビロダンゴムシ科	Armadillidae
コシビロダンゴムシ属	*Sphaerillo*
ドナンコシビロダンゴムシ	*Sphaerillo donanensis* n.sp.
オオハラコシビロダンゴムシ	*Sphaerillo oharaensis* n.sp.

Family Olibrinidae

***Olibrinus kushimotoensis* n. sp.**

(Jap. name:Kushimoto-higenaga-warajimushi, new)

Fig.179

Material examined:4♂♂(1♂ holotype, 4.9 mm in body length and 3♂♂ paratypes,3.8～4.5mm in body length) and 2♀♀(1♀ allotype, 4.2 mm in body length and 1♀ paratype,3.8mm body length), intertidal zone on the sandy bottom near big rocks, Shionomisaki, Kushimoto-cho, Wakayama Pref., coll. Noboru Nunomura, June 14, 1991. Type series is deposited as follows: holotype(TOYA Cr-11189), allotype(TOYA Cr-11190) and a paratype(TOYA Cr-11191) at the Toyama Science Museum and a paratype (OMNH Ar-3499) at the Osaka Museum of Natural History.

Description: Body elongated, 3.3 times as long as wide. Body colour white. Cephalon round with a low and rounded medial process. Each peraeonal somite subequal in length. Each pleonal somite subequal in length. Eyes very small, each eye with 4～5 ocelli. Pleotelson trianguler with a truncate medial process.

First antenna (Fig.179 B) 3-segmented; first segment stout; second segment square; terminal segment with 5 aesthetascs.

Second antenna (Fig.179 C), reaching the anterior part of the fifth peraeonal somite. Mutual length of 5 peduncular segments is 1: 2: 2: 4: 6. Flagellum with 12 segments.

Right mandible (Fig.179 D); pars incisiva 2-headed; lacinia mobilis 3-toothed; a plumose seta behind lacinia mobilis; processus molaris is represented by a tuft setae.

Left mandible (Fig.179 E); pars incisiva 2-headed; lacinia mobilis 2-toothed; 3 plumose setae behind lacinia mobilis; processus molaris is represented by a tuft of setae.

First maxilla (Fig.179 F); outer lobe with 12 teeth at the tip.

Second maxilla (Fig.179 G) slender.

Maxilliped (Fig.179 H); endite slender; palp with suture lines limited to the lateral part.

First peraeopod (Fig.179 I); basis oblong; ischium half length of basis; merus as long as ischium; carpus a little longer than merus, with 6～7 setae on inner margin; propodus relatively short.

Seventh peraeopod (Fig.179 J); basis rectangular; ischium also rectangular with a sternal margin; merus 2/3 length of ischium; carpus as long as ischium with 6 setae on inner margin and 3～4 setae on outer margin; propodus slender, a little longer than carpus with 4 setae on inner margin.

Penes (Fig.179 K) narrow lanceolate.

Male first pleopod (Fig.179 K); endopodite with bar-like structures on distal half of endopodite; exopdite rounded.

Male second pleopod (Fig.179 L); endopodite straight and narrow; exopodite round.

Uropod (Fig.179 M); basis rectangular; exopodite long, 1.5 times as long as basis;

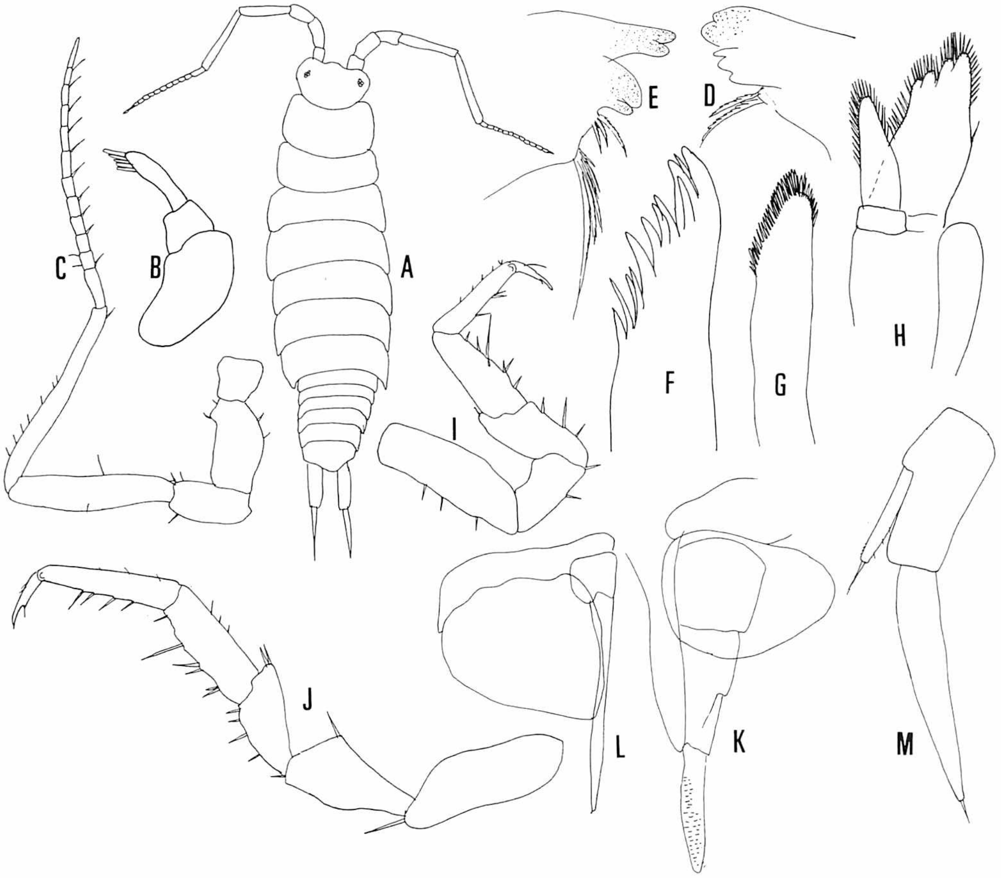

Fig.179 *Olibrinus kushimotoensis* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; D.Right mandible; E.Left mandible; F.Outer lobe of first maxilla; G.Second maxilla; H.Maxilliped; I.First peraeopod; J.Seventh peraeopod; K.Penes and male first pleopod; L.Male second pleopod. M.Uropod (All: Holotype male).

endopodite narrow and half length of exopodite.

Remarks: The present new species is closely allied to *Olibrinus elongatus* Nunomura reported from the Reef of Okinawa Island but the former is separated from the latter in the following features:(1) stouter body shape,(2)less numerous ocelli of eyes,(3) shorter and less numerous segments of second antenna, and (4)shorter uropod.

Family Marinoniscidae

Marinoniscus kosugei n. sp.

(Jap. name:Kosuge-migiwa-warajimushi, new)

Fig.180

Material examined:2♂♂(1♂holotype, 4.8 mm in body length and 1♂ paratype, 4.3 mm in body length) and 2♀♀(1♀ allotype, 3.6mm in body length and 1♀ paratype, 3.5 mm in body length), intertidal zone on the sandy bottom of the estuary of the mouth of Yuhi-river, Tamagusuku-son and transverse to Gushikami-son, Okinawa Island, Okinawa Pref., coll. Takeharu Kosuge, Apr.1991. Type series is deposited as follows: holotype (TOYA Cr-11192), allotype(TOYA Cr-11193) and a paratype (TOYA Cr-11194) at the Toyama Science Museum and a paratype (OMNH Ar-3487) at the Osaka Museum of Natural History.

Description: Body elongated, 3.4 times as long as wide. Body colour white in alcohol. Cephalon round. Each peraeonal somite subequal in length. Each pleonal somite subequal in legnth. Eyes very small, each eye with 4 ocelli. All the noduli laterales (Fig.180 N) is near the lateral border. Pleotelson hour-grass-shaped.

First antenna (Fig.180 B) 3-segmtned; first segment stout; second segment a little shorter than the first and square; terminal segment narrow with 3 aesthetascs at the tip.

Second antenna (Fig.180 C), reaching the posterior part of the second peraeonal segment. Mutual length of 5 peduncular segments is 1: 1: 1: 3.5: 4. Flagellum 1.5 times as long as the fifth peduncular segment and mutual length of 7 flagellar segments is 5: 1: 1: 1: 1: 1: 1.

Right mandible (Fig.180 D);pars incisiva 3-headed; lacinia mobilis single-toothed; 2 hairy bristles between lacinia mobilis and processus molaris. Processus molaris is represented by a group of serrated setae.

Left mandible (Fig.180 E); pars incisiva mobilis 2-toothed; lacinia mobilis strong and 3-toothed; 3 hairy bristles between lacinia mobilis and processus molaris. Processus molaris is represented by a group of serrated setae.

First maxilla (Fig.180 F); exopodite with 10 teeth at the tip.

Second maxilla (Fig.180 G) rather narrow.

Maxilliped (Fig.180 H); endite rather slender; palp rather with only suture lines and bearing many setae.

First peraeopod (Fig.180 I); basis rectangular; ischium half length of basis; merus and carpus rectangular with 7～8 setae on inner margin; propodus with 4 setae on inner margin.

Seventh peraeopod (Fig.180 J); basis rectangular; ischium rectangular; merus 3/4 length

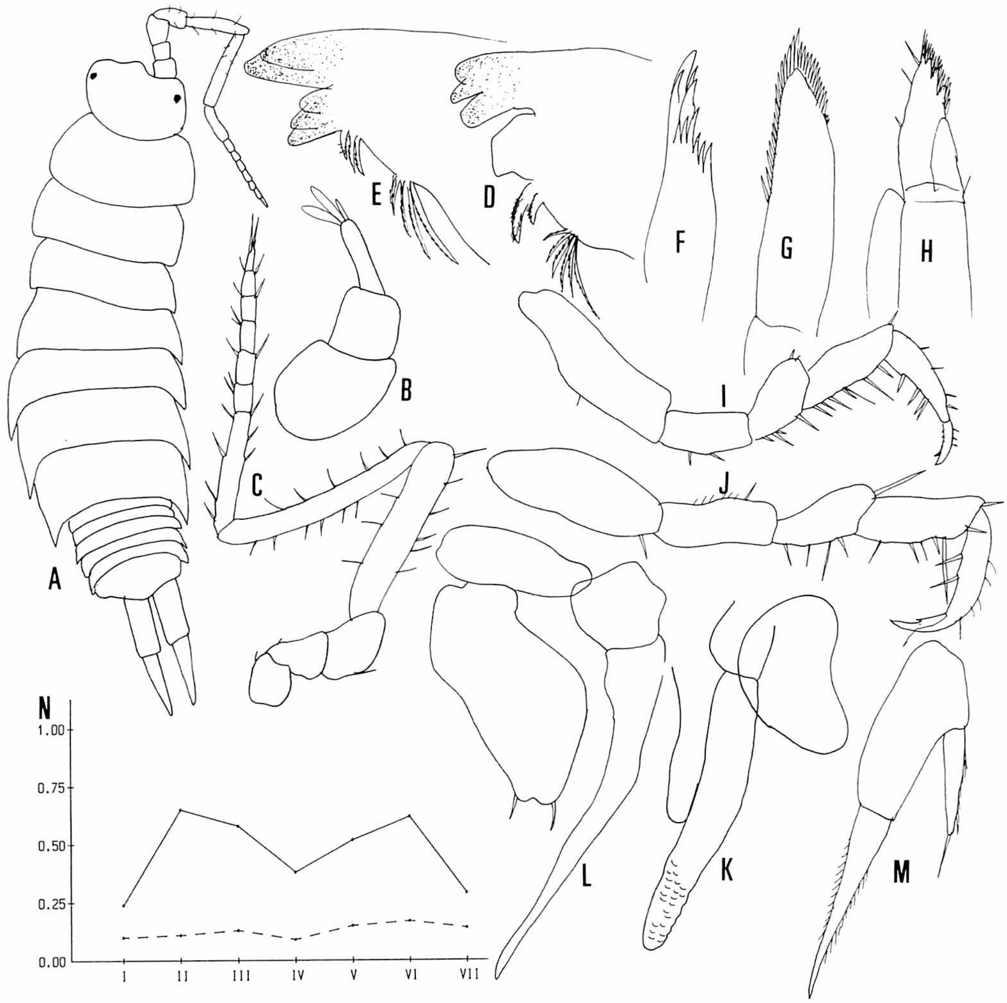

Fig.180 *Marinoniscus kosugei* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; D.Right mandible; E.Left mandible; F.Outer lobe of first maxilla; G.Second maxilla; H.Maxilliped; I.First peraeopod; J.Seventh peraeopod; K.Penes and male first pleopod; L.Male second pleopod; M.Uropod; N.Position of noduli lateralis (All: Holotype male).

of ischium, with a long seta at outer distal corner; carpus rectangular with 5 setae on inner margin; propodus long with 2 setae on inner margin.

Penes (Fig.180 K) rectangular.

Male first pleopod (Fig.180 K); exopodite elliptical; endopodite straight with many rows of bar-like structures on distal part.

Male second pleopod (Fig.180 L); exopodite trapeozoid with 2 setae at the both corners of distal end; endopodite long and exceeds far beyond the exopodite.

Uropod (Fig.180 M); basis stout; exopodite long; endopodite narrow with a seta at the tip.

Remarks: The present new species is most closely allied to *Marinoniscus tomiokaensis* reported from the intertidal zone of Shiraiwazaki, Amakusa, Kumamoto Prefecture. But the former is separated from the latter in the following features:(1)white body colour,(2) position of noduli lateralis, (3)less numerous teeth of first maxilla, and(4) shape exopodite of male second pleopod.

Marinoniscus aestuari n. sp.

(Jap. name:Irie-migiwawarajimushi, new)

Fig.181

Material examined: 4♂♂(1♂ holotype, 2.8 mm in body length and 3♂♂ paratypes, 3.0~3.5 mm in body length)and 6♀♀(1♀ allotype, 3.8mm in body length and 5 ♀♀ paratypes, 2.0~4.4 mm in body length), Estuary of the Oura River, Nago City, Okinawa Island, Okinawa, Pref., coll. Noboru Nunomura, July 14, 1991. Type series is deposited as follows: holotype (TOYA Cr-11195), allotype (TOYA Cr-11196) and 4 paratypes(TOYA Cr-11197~11200) and 2 paratypes (OMNH Ar-3485-3486)at the Osaka Museum of Natural Hisotry.

Description: Body oblong, 2.6 times as long as wide. Body colour red in life, but paler brown in alcohol. Cephalon semicircular, medial and a pair of lateral lobes very low. Noduli laterales of peraeonal somites I-V near the lateral border. Noduli laterales of peraeonal somites VI-VII indistint. Eyes small, each eye with 4 ocelli. Pleotelson relatively long.

First antenna(Fig.181 B); first segment rectangular; second segment short; terminal segment rectangular with well developed 4~5 aesthetascs at the tip.

Second antenna(Fig.181 C), long and reaching the posterior part of fourth peraeonal somite, fifth segment 1.4 times longer than the fourth but a little narrower. Flagellum consits of 10 segments in male, first flagellar segment about 3 times as long as the second segment.

Right mandible(Fig.181 D); pars incisiva 3-headed; lacinia mobilis 3-toothed; 2 plumose setae behind lacinia mobilis; processus molaris is represented by a tuft of setae.

Left mandible(Fig.181 E); pars incisiva 2-headed; lacinia mobilis 3-toothed; 2 pluomose setae behind lacinia mobilis; processus molaris is represented by a single seta.

First maxilla(Fig.181 F); outer lobe slender with 10 entire teeth at the tip.

Second maxilla(Fig.181 G) rather slender.

Maxilliped(Fig.181 H); endite narrow; palp without any spines.

First peareopod(Fig.181 I); basis oblong; ischium half length of basis; merus almost as long as ischium; carpus 1.3 times as merus; propodus with 4 teeth on outer margin.

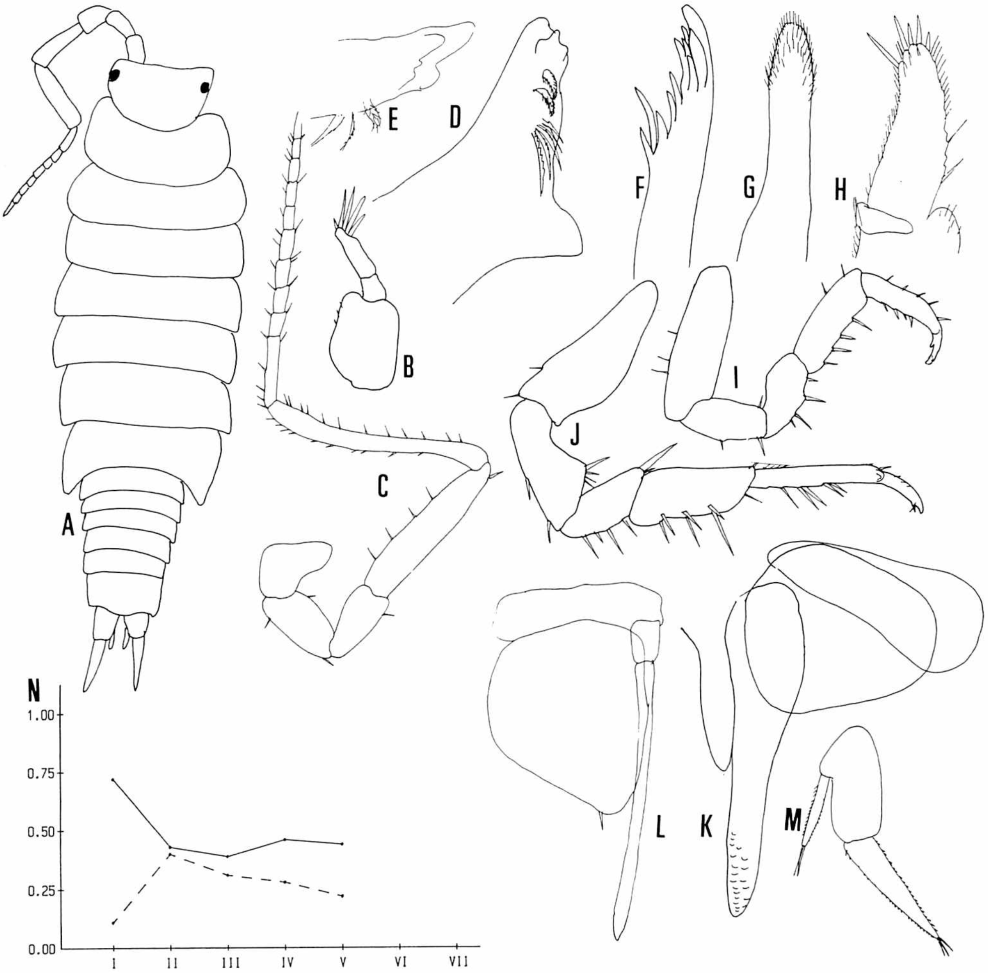

Fig.181 *Marinoniscus aestuari* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; D.Right mandible; E.Left mandible; F.Outer lobe of first maxilla; G.Second maxilla; H.Maxilliped; I.First peraeopod; J.Seventh peraeopod; K.Penes and male first pleopod; L.Male second pleopod .M.Uropod N: Position of noduli laleralts (All: Holotype male).

Seventh peraeopod(Fig.181 J); basis fusiform; ischium rectangular with a sternal margin; merus half length of ischium; carpus as long as ischium; propodus narrow.

Penes(Fig.181 K)fusiform.

Male first pleopod(Fig.181 K); endopodite straight with many denticles on distal half.

Male second pleopod(Fig.181 L); endopodite narrow and straight.

Uropod(Fig.181 M); basis rectangular; endopodite as long as basis and tapers toward the tip; exopdite about half length of endopodite.

Habitat: Under the stones, among the wet sand, intertidal zone, together with polychaetous annelid worm and other marine organisms.

Remarks:The present new species is allied to *Marinoniscus tomiokaensis* Nunomura recorded from the intertidal zone of Tomioka, near Amakusa Marine Biological Loboratory, but the former is separable from the latter in the following features:(1)more numerous segments of flagellum of second antenna,(2)less numerous ocelli of eyes,(3)shape of exopodite of male second pleopod, (4)more numerous aesthetascs on the first antennae, and (5) position of noduli lateralis.

Marinoniscus nomurai n. sp.

(Jap. name:Nomura-migiwa-warajimushi, new)

Fig.182

Material examined: 2♂♂(1♂ holotype, 3.2 mm in body length; and 1♂ paratype, 2.8 mm in body length) and 2♀♀(1♀ allotype, 2.8 mm in body length and 1♀ paratype, 3.5mm in body length), Kametsu, Tokunoshima Island, Kagoshima, Pref., coll. Keiichi Nomura, July 5, 1991. Type series is deposited as follows: holotype (TOYA Cr-11201), allotype (TOYA Cr-11202) and 2 paratypes(TOYA Cr-11203～11204).

Description: Body oblong, 2.6 times as long as wide. Body colour red in life, but pale brown in alcohol. Cephalon semicircular with a low medial process. Eyes small, each eye with 4～5 ocelli.

First antenna(Fig.182 B); first segment rectangular; second segment short; terminal segemnt rectangular with well developed aesthetascs at the tip.

Second antenna(Fig.182C and D) long and reaching the posterior part of fourth peraeonal somite, fifth peduncular segment 1.4 times longer than the fourth but a little narrower. Flagellum consists of 10 segments in male but 7 in female, first flagellar segment about 3 times as long as the second.

Right mandible(Fig.182 E); pars incisiva 3-headed; lacinia nobilis 2-toothed; 2 plumose setae behind lacinia nobilis; processus mobilis is represented by a tuft of setae.

Left mandible(Fig.182 F); pars incisiva 3-toothed; lacinia nobilis 3-toothed; a plumose seta behind lacinia nobilis; processus molaris is represented by a tuft of setae.

First maxilla(Fig.182 G); outer lobe narrow with 12 teeth at the tip.

Second maxilla(Fig.182 H) relatively narrow.

Maxilliped(Fig.182 I); endite narrow, ending to a single seta; palp with many setae around the margin.

First peareopod(Fig.182 J);basis oblong; ischium narrower than basis; merus half length of basis; carpus with 3 serrated and 4 simple setae on inner margin; propodus as long as carpus with 2 longer and many minute setae on inner margin.

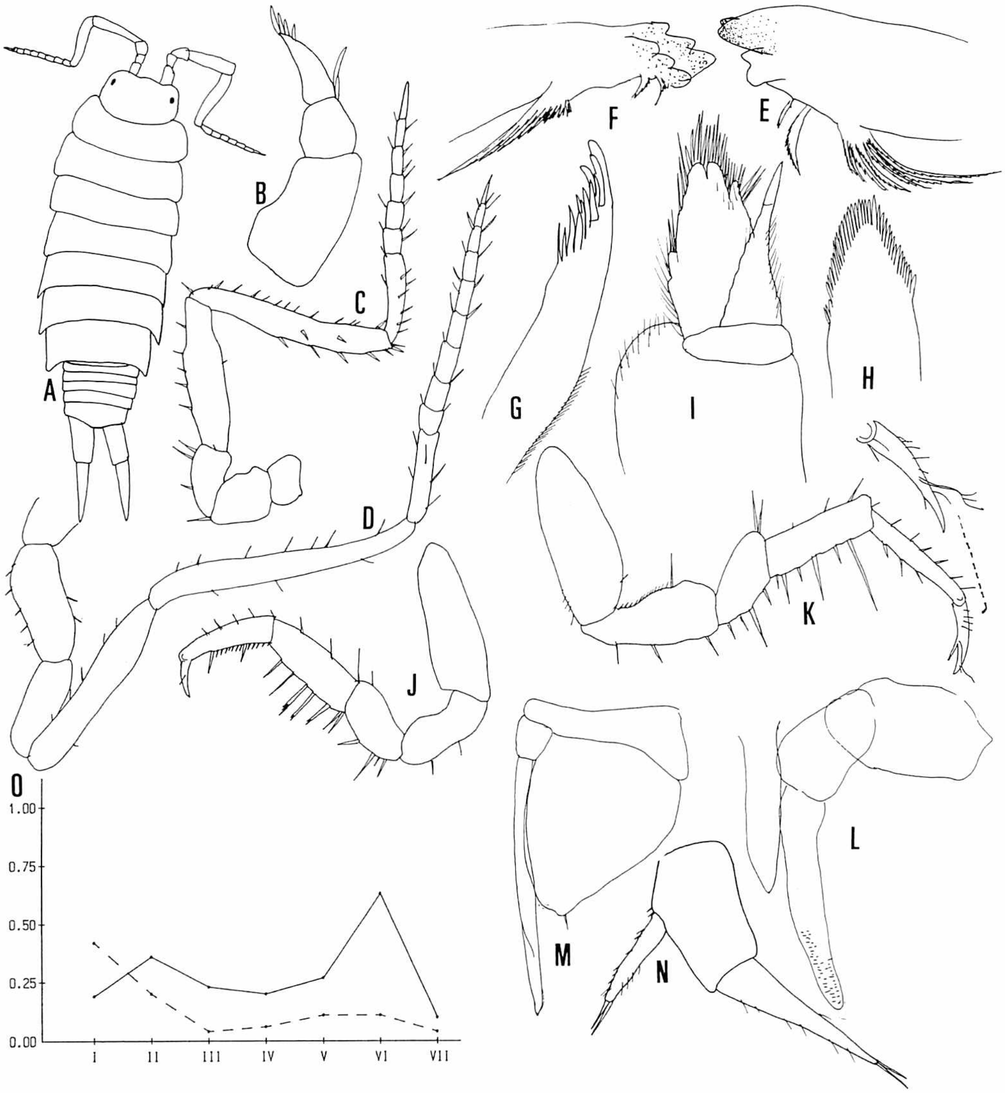

Fig.182 *Marinoniscus nomurai* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; of female; D.The same of male; E.Right mandible; F.Left mandible; G.Outer lobe of first maxilla; H.Second maxilla; I Maxilliped; J.First peraeopod. K.Seventh peraeopod; L.Penes and male first pleopod; M.Male second pleoped; N.Uropod; O.Position of Noduli lateralis (All: Holotype male).

Seventh peraeopod(Fig.182 K); basis oblong; ischium a little shorter than basis; merus half length of ischium; carpus rectangular with long setae; propodus narrow and long.

Penes(Fig.182 L) relatively narrow.

Male first pleopod(Fig.182 L); endopodite straight with a small bar-like structures on distal part; exopodite round.

Male second pleopod(Fig.182 M); endopodite straight; exopodite short and narrow; endopodite long.

Uropod (Fig.182 N); basis rectangular; endopodite short and narrow; exopodite long.

Habitat: Under the stones, among the wet sand, the intertidal zone, taken together with polychaetous annelid worm.

Remarks: The present new species is most closely allied to *M. pacificus* Nunomura, recorded from Kushimoto, Kii Peninsula, but the former is separated from the latter in the following features: (1)less prominent lateral border, (2) longer setae on peraeopods,(3) shape of exopodite of male pleopod, and (4) less numerous teeth on first maxilla.

Family Philosciidae

Papuaphiloscia terukubiensis n. sp.

(Jap. name:Yanbaru-minami-warajimushi, new)

Fig.183

Material examined: 7♂♂(1♂ holotype, 4.9 mm in body length and 6♂♂ paratypes, 2.7 ~3.7 mm in body length) and 1♀(allotype, 4.3 mm in body length), load side of forest, Terukubi-yama, Yona-son, Okinawa Island, coll. Noboru Nunomura, July 14, 1991. Type series is deposited as follows: holotype(TOYA Cr-11205), allotype(TOYA Cr-11206) and 2 paratypes (TOYA Cr-11207~11208) at the Toyama Science Museum, a paratype(OMNH Ar -3492) at the Osaka Museum of Natural History, a paratype (YCM CI- 969)at the Yokosuka Museum and a paratype (NSMT Cr-1491) at the National Science Museum, Tokyo.

Description: Body elongated, about 3.6 times as long as wide. Body colour almost white both in alival and in alcohol. Lateral angles of first to third peraeonal segments almost rectangular, while those of fourth to sixth only slightly protruded and seventh peraeonal somites protruded strongly posteriorely. Eyes small, each eye composed of 4 ocelli. Noduli lateralis (Fig.183 O) on the peraeonal somites relatively near to the lateral border, but only one on the pereaeonal somite 2 is remote.

First antenna(Fig.183 C); first segment square; second segment square; third segment relatively long.

Second antenna(Fig.183 D) relatively long, reaching the anterior part of the third peraeonal somite; mutual length of first to fifth peduncular segments is 1: 2: 2: 3.5:5. Flagellum 80% length of the fifth peduncular segment, mutual length of three flagellar segments is 3: 2: 2.

Right mandible(Fig.183 E); pars incisiva 3-headed; lacinia mobilis 3-toothed; 3 hairy bristles between lacinia mobilis and processus molaris; processus molaris is represented by a long hairy seta.

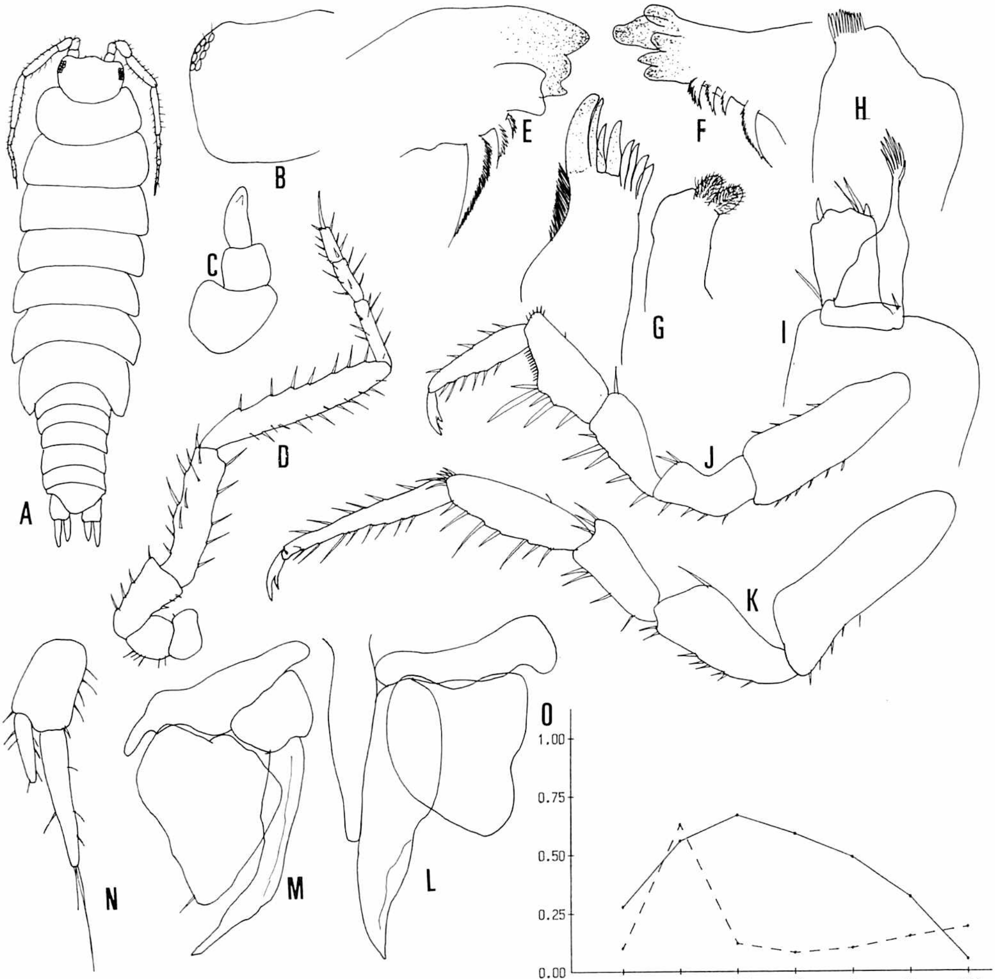

Fig.183 *Papuaphilosia terukubiensis* n. sp.
A.Dorsal view; B.Cephalon; C.First antenna; D.Second antenna; E.Right mandible; F.Left mandible; G.First maxilla; H.Second maxilla; I.Maxilliped; J.First peraeopod; K.Seventh peraeopod; L.Penes and male first pleopod; M.Male second pleopod; N.Uropod; O.Positon of noduli lateralis (All: Holotype male).

Left mandible(Fig.183 F); pars incisiva 3-headed: lacinia mobilis 2-toothed; 2 hairy bristles between lacinia and processus molaris; processus molaris is represented by a long hairy seta.

First maxilla(Fig.183 G); outer lobe with 8 simple teeth, the outermost one is stoutest; inner lobe rectangular with 2 plumose setae.

Second maxilla(Fig.183 H) wide but dental part rather narrow.

Maxilliped(Fig.183 I); endite rectangular with 2 stout spines and 2 long setae; palp slender with with a group of setae at the tip.

First peraeopod(Fig.183 J); basis oblong; ischium half length of basis and 4 setae on inner margin; merus as long as ischium with 5 relatively long setae on inner margin and a seta at distal outer corner; carpus again as long as carpus with 5 long setae on basal half of inner margin and many small setae on distal half of inner margin; propodus also as long as carpus and with 6 setae on inner margin.

Seventh peraeopod(Fig.183 K); basis oblong; ischium about 2/3 length of basis, with asternal margin; merus 2/3 length of ischium; carpus as long as ischium with 7 setae on inner margin and 5 setae on outer distal corner; propodus slender, a little longer than carpus with 8 setae on inner margin; dactylus rather long.

Penes(Fig.183 L)fusiform.

Male first pleopod(Fig.183 L); exopodite rounded, with a slight bent on the distal margin; endopodite rather short and straight, apical part pointed.

Male second pleopod(Fig.183 M); exopodite triangular; endopodite straight and rather short.

Uropod(Fig.183 N); basis square; exopodite fusiform; endopodite longer than exopodite, twice as long as the exopodite.

Remarks: The present new species is most closely allied to *Papuaphiloscia insulana* Vandel, collected from Okinoerabu Island, Amami Islands, Kagoshima Prefecture, but the former is separated from the latter in the following features: (1) presence of eye, (2)longer second antenna, (3)acuter end of endopodite of male first pleopod, and (4)position of noduli lateralis on fourth peraeonal somite.

Family Trachelipidae

Nagurus kunigamiensis n. sp.

(Jap. name: Yanbaru-hayashi-warajimushi, new)

Fig.184

Material examined: 3 ♂♂ (1♂ holotype, 4.2 mm in body length and 2♂♂ paratypes, 3.6∼3.8 mm in body length), and 8♀♀ (1♀ allotype, 6.8 mm in body length and 7♀♀, paratypes, 4.7∼5.8 mm in body length), coll. Noboru Nunomura, at the foot of the Terukubi-yama, Yona-son, Okinawa-Island, Okinawa Pref., coll. Noboru Nunomura, July 14,1991. Type series is deposited as follows: holotype(TOYA Cr-11209), allotype(TOYA Cr-11210)and 2 paratypes(TOYA Cr-11211∼11212)at the Toyama Science Museum, 2 paratypes (OMNH Ar-3493∼3494)at the Osaka Museum of Natural History, a paratype (YCM CI-970)at the Yokosuka City Museum, and a paratype (NSMT Cr-1492) at the National Science Museum, Tokyo.

Description: Body 3.1 times as long as wide. Body colour brown with paler irregular

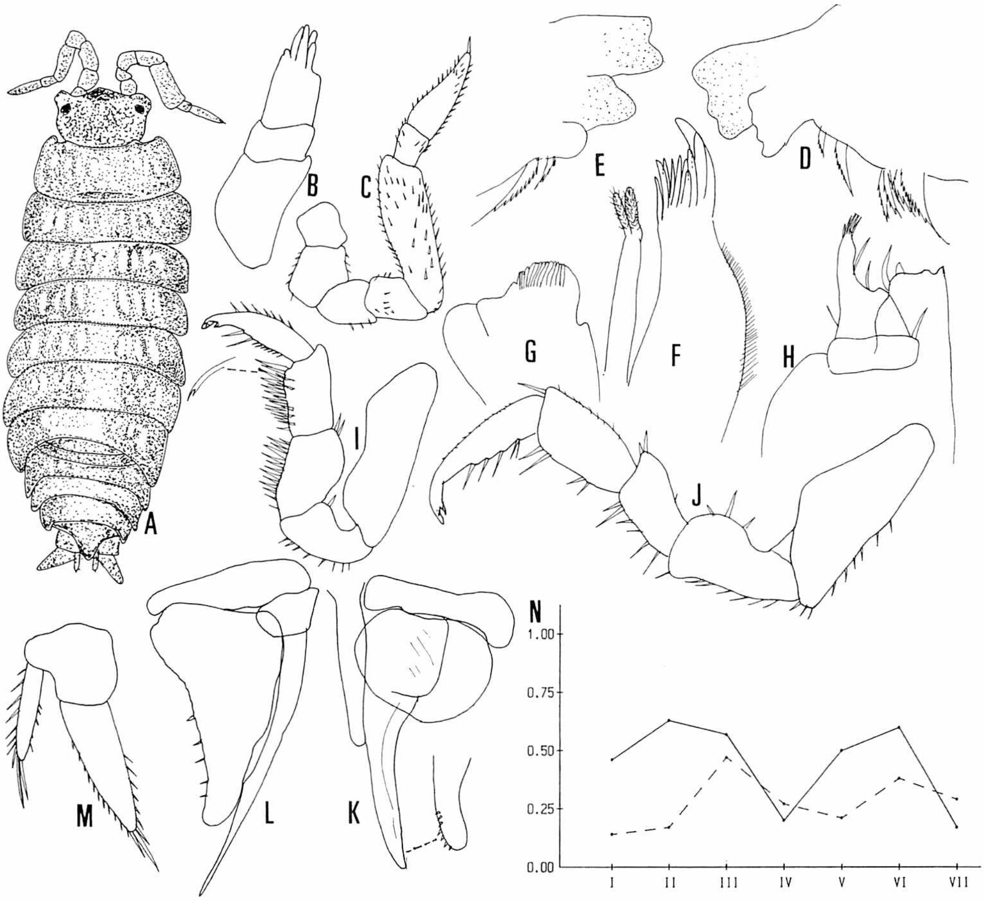

Fig.184 *Nagurus kunigamiensis* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; D.Right mandible; E.Left mandible; F.First maxilla; G.Second maxilla; H.Maxilliped; I.First peraeopod; J.Seventh peraeopod; K.Penes and male first pleopod; L.Male second pleopod; M.Uropod; N. Positon of noduli lateralis (All: Holotype male).

patterns. Body surface granulated. Cephalon with a low triangular medial process and a pair of well developed lateral projections. Eyes mediocre in size and each eye composed of 16 ocelli. Each peraeonal somite subequal in length but the posterior 2 somites strongly recurved in both sides. Noduli latelaris(Fig.184 N) except III and VI are situated near the lateral border. Pleonal somites I-II short; pleonal somites III-V with distinct epimera. Pleotelson triangular without any concavity.

First antenna(Fig.184 B); first segment cylindrical with a small protrution at the distal end; second segment short; terminal segments rectangular with 4~5 aesthetascs at the tip.

Second antenna(Fig.184 C) rather short, reaching the posterior part of the first peraeonal somite. Peduncle rather short, first to fourth segments square and almost equal in length, fifth peduncular segment 1.5 times as long as the fourth. Flagellum 2-segmented and almost as long as the fifth peduncular segment; second segment 2.5 times as long as the first.

Right mandible(Fig.184 D); pars incisiva 3-headed; lacinia mobilis single-headed; 2 hairy bristles between lacinia mobilis and processus molaris; processus molaris represented by a tuft of setae.

Left mandible(Fig.184 E); pars incisiva 2-headed; lacinia mobilis single-toothed; a hairy bristle between lacinia mobilis and processus molaris; processus molaris is represented by a seta.

First maxilla(Fig.184 F); outer lobe with 10 relatively long entire teeth; inner lobe with 2 long plumose setae.

Second maxilla(Fig.184 G) bilobed with wide dental area.

Maxilliped(Fig.184 H); endite stout with 2 strong spines; palp normal *Nagurus* type.

First peraeopod(Fig.184 I); basis oblong; ischium 40% the length of basis; merus rectangular with many long setae on inner margin; carpus slightly as long as merus with many long setae on inner margin; propodus with about a dozen shorter setae on the basal half on inner margin and 2 longer setae on the distal half of inner margin.

Seventh peraeopod(Fig.184 J); basis oblong; ischium with a sternal margin; carpus a little shorter than ischium; carpus also as long as ischium; propodus with several setae on inner margin.

Penes(Fig.184 K)narrow.

Male first pleopod(Fig.184 K) straight, apical part bents outerwards; exopodite egg-shaped, with slightly sinuate outer margin.

Male second pleopod(Fig.184 L); endopodite straight and slender, exopodite triangular.

Uropod(Fig.184 M); basis square; endopodite narrow; exopodite longer than endopodite.

Remarks:The present new species is most closely allied to *Nagurus miyakoensis* reported from Miyako Island, but the former is separated from the latter in the following features: (1) slender body, (2)shorter and blackish second antennae, (3)wider but shorter pleotelson, (4)less numerous denticles on the endopodite of male first pleopod, (5)position of noduli lateralis on second peraeonal somite, and (6)shorter endopodite of male second pleopod.

***Nagurus okinawaensis* n. sp.**

(Jap. name: Okinawa-hayashi-warajimushi, new)

Fig.185

Material examined: 4♂♂(1♂holotype, 3.3 mm in body length, and 3♂♂ paratypes, 2.9～3.3 mm in body length) and 6♀♀(1♀ allotype, 4.7 mm in body length and 5♀♀ paratypes, 3.3～4.7 mm in body length), in the farm of Ryukyu University, Senbaru, Nishiharu-cho, Okinawa Island, Okinawa Pref., coll. Noboru Nunomura, July 14. 1991. Type series is deposited as follows: holotype(TOYA Cr-11213), allotype(TOYA Cr-11214)and 3 paratypes (TOYA Cr-11215〜11217) at the Toyama Science Museum, and 2 paratypes(OMNH Ar-3495 〜3496) at the Osaka Museum of Natural History, 2 paratypes (YCM CI-971〜972) at the Yokosuka City Museum, and 2 paratypes (NSMT Cr-1493) at the National Sciecne Museum, Tokyo.

Description: Body 2.1 times as long as wide. Body colour brown with paler irregular patterns. Body surface slightly granulated. Cephalon with a triangular medial process and a pair of well developed lateral projections. Eyes mediocre in size and each eye composed of 14〜16 ocelli. Each peraeonal somite subequal in length but the posterior 2 somites strongly recurved in both sides. Noduli lateralis indistinct. Pleonal somites I-II short; pleonal somites III-V with acutely protruded distinct epimera. Pleotelson triangular, with distinct concavities on both sides.

First antenna(Fig.185 B); first segment big; second segment square; terminal segment rectangular with 5 aesthetascs at the tip.

Second antenna(Fig.185 C) relatively short, reaching the posterior part of the first peraeonal somite. Peduncle long, first segment small; second and third segments twice as long as wide; fourth segment exceeds 3.5 times as long as the third, fifth peduncular segment twice as long as the fourth. Flagellum 2-segmented and 0.8 time as long as the fifth peduncular segment; second segment 1.5 times as long as the first.

Right mandible(Fig.185 D); pars incisiva 3-headed; lacinia mobilis single-headed; 2 hairy bristles between lacinia mobilis and processus molaris; processus molaris is represented by a tuft of setae.

Left mandible(Fig.185 E); pars incisiva 3-headed; lacinia mobilis 2-headed; 2 hairy bristles between lacinia mobilis and processus molaris; processus molaris is represented by a tuft of setae.

First maxilla(Fig.185 F); outer lobe with 10 teeth, 8 of which are simple type and other 2 are serrated.

Second maxilla(Fig.185 G) bilobed with wide dental area.

Maxilliped(Fig.185 H); endite stout with 3 strong spines; palp normal *Nagurus* type.

First peraeopod(Fig.185 I); basis oblong; ischium half the length of basis; merus rectangular with many long setae on inner margin; carpus slightly longer than merus with many long setae on inner margin; propodus with 5〜6 setae on inner margin.

Seventh peraeopod(Fig.185 J); basis oblong; ischium with a sternal margin; merus a little shorter than ischium; carpus rectangular, as long as ischium; propodus long with 4 longer and a few of shorter setae on inner margin.

Penes(Fig.185 K) narrow.

Male first pleopod(Fig.185 K); straight, apical part slightly bents outerwards; exopodite almost square, with slightly sinuate outer margin.

Male second pleopod(Fig.185 L); endopodite straight and slender, exopodite trigngular,

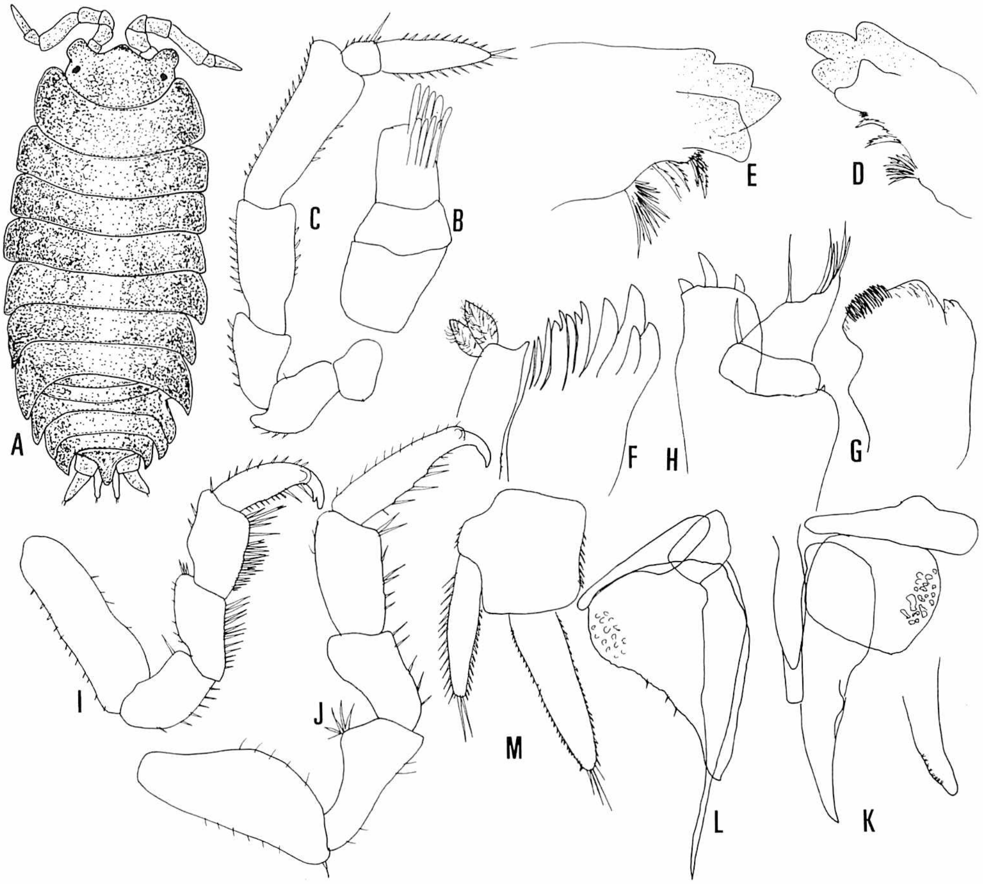

Fig.185 *Nagurus okinawaensis* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; D.Right mandible; E.Left mandible; F.First maxilla; G.Second maxilla; H.Maxilliped; I.First peraeopod; J.Seventh peraeopod; K.Penes and male first pleopod; L.Male second pleopod. M.Uropod (All: Holotype male).

with slightly sinuate distal margin.

Uropod(Fig.185 L); basis square; endopodite narrow; exopodite longer than endopodite.

Remarks:The present new species is most closely allied to *Nagurus kunigamiensis* Nunomura already reported in this paper, from northern part of Okinawa Island, but the former is separated from the latter in the following features: (1)longer endopod of male first pleopod, (2) presence of serrated teeth of the first maxilla, (3)more numerous aesthetascs of first antenna and (4) lack of noduli laterales on peraeonal somites.

Family Porcellionidae

Leptotrichus chobihige n. sp.

(Jap. name: Yaeyama-chobihige-warajimushi, new)

Fig.186

Material examined:4♂♂(1♂holotype, 4.0 mm in body length and 3♂♂ paratypes, 3.5〜5.4 mm in body length) and 6♀♀ (1♀ allotype, 4.6 mm in body length and 5♀♀ 4.1〜5.3 mm in body length), at Tonoshiro, Ishigaki Island, Okinawa Pref., coll. Noboru Nunomura, July 12, 1991. Type series is deposited as follows: holotype(TOYA Cr- 11218), allotype(TOYA Cr-11219) and 5 paratypes (TOYA Cr-11220〜11224) at the Toyama Science Museum, 2 paratypes (OMNH Ar-3490〜3491) at the Osaka Museum of Natural History, 2 paratypes (YCM CI-967〜968) at the Yokosuka City Museum and 2 paratypes (NSMH Cr-1489) at the National Science Museum, Tokyo.

Description: Body 1.9 times as long as wide. Body colour pale brown with paler irregular patterns. Body surface granulated. Cephalon with a pair of well developed lateral projections. Eyes small and each eye composed of 6 ocelli. Each peraeonal somite subequal in length but the posterior 2 somites strongly protruded backwards. Noduli lateralis indistinct. Pleonal somites I-II short; pleonal somites III-V with distinct epimera. Pleotelson triangular without any concavity, tip rounded.

First antenna(Fig.186 B); first segment cylindrical with a protrution at the distal part; second segment short; terminal segments rectangular with 8〜9 aesthetascs at the tip.

Second antenna(Fig.186 C) rather short, reaching only middle part of the third peraeonal somite. Peduncle long, first segment small; second and third segments twice as long as wide; fourth segment exceeds twice as long as the third, fifth peduncular segment 1.5 times as long as the fourth. Flagellum 2-segmented and 0.8 time as long as the fifth peduncular segment; second segment 3 times as long as the first.

Right mandible(Fig.186 D); pars incisiva weakly 3-headed; lacinia mobilis single- headed; 2 hairy bristls between lacinia mobilis and processus molaris; processus molaris is reprsented by a tuft of seta.

Left mandible(Fig.186 E);pars incisiva single-headed; lacinia mobilis weakly 3-toothed; 2 hairy bristles between lacinia mobilis and processus molaris; processus molaris is represented by a single seta.

First maxilla(Fig.186 F); outer lobe with 10 entire teeth.

Second maxilla bilobed with relatively narrow but wide dental area.

Maxilliped(Fig.186 G); endite stout with 2 strong spines; palp normal *Leptotrichus* type.

First peraeopod(Fig.186 H); basis oblong; ischium less than half length of basis; merus rectangular with many long setae on inner margin; carpus slightly longer than merus with many long setae on inner margin; propodus rather short with 5〜6 setae on inner margin.

Seventh peraeopod(Fig.186 I); basis oblong; ischium with 4 setae at sternal margin; merus a little shorter than ischium with many setae on inner margin; carpus again a little longer

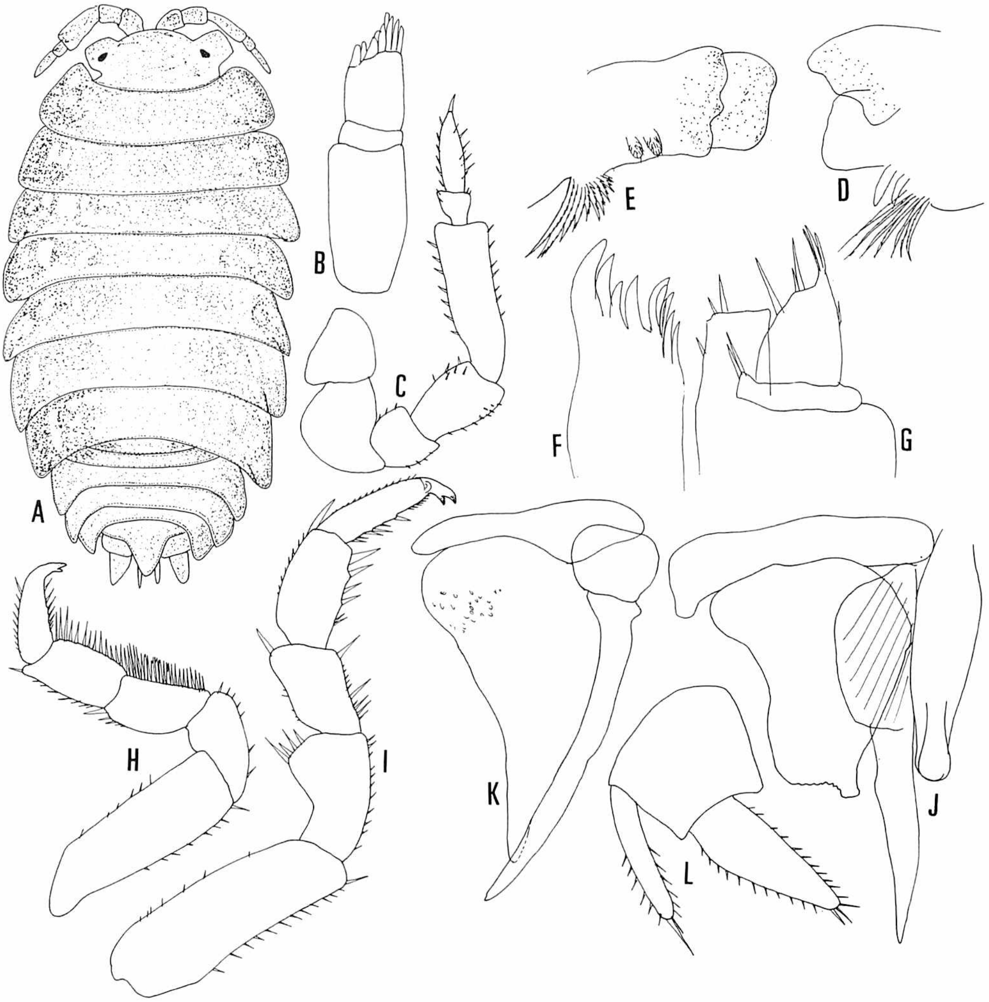

Fig.186 *Leptotrichus chobihige* n. sp.
A.Dorsal view; B.First antenna; C.Second antenna; D.Right mandible; E.Left mandible; F.Outer lobe of first maxilla; G.Maxilliped; H.First peraeopod; I.Seventh peraeopod; J.Penes and male first pleopod; K.Male second pleopod; L.Uropod (All: Holotype male).

than merus; propodus with 6 longer and several shorter setae on inner margin.

Penes(Fig.186 J) relatively stout, both lateral margins alomst pararelle.

Male first pleopod(Fig.186 J); endopodite straight; exopodite pentagonal with sinuate outer margins.

Male second pleopod(Fig.186 K); endopodite straight and slender, exceedingly beyond triagngular exopodite.

Uropod(Fig.186 L)relatively short and stout; basis square; endopodite narrow; exopodite stout and as long as endopodite.

Remarks:The present new species is most closely allied to *Leptotrichus kudakaensis* Nunomura, reported from Okinawa Island, but the former is separated from the latter in the following features: (1) bigger body size, (2)longer second antenna, (3) ratio of the length of 2 flagellar segments of second segment, (4) absence of swollen part of carpus of male seventh peraeopod, (5) sinuate exopodite of male first pleopod, and (6)absence of noduli lateralis on the second to fourth peraeonal somites.

Family Armadillidae

Sphaerillo donanensis **n. sp.**

(Jap. name:Donan-koshibiro-dangomushi,new)

Fig.187

Material examined: 2♂♂ (1♂ holotype, 4.4 mm in body length and 1♂ paratype, 4.0 mm in body length) and 6♀♀(1♀ allotype, 5.5 mm in body length and 4♀♀ paratypes, 3.6〜6.0 mm in body length), forest of Sonai, Yonaguni Island, Okinawa Pref., coll. Noboru Nunomura, July 11, 1991. Type series is deposited as follows: holotype (TOYA Cr-11225), allotype(TOYA Cr-11226) and 3 paratypes (TOYA Cr-11227〜11229)at the Toyama Science Museum, a paratype(OMNH Ar-3497) at the Osaka Museum of Natural History, a paratype (YCM CI-973) at the Yokosuka City Museum, and a paratype (NSMT Cr-1494) at the National Science Museum, Tokyo.

Description: Body convex, 1.8 times as long as wide. Colour brown with irregular patterns. Eyes small, each eye with 10 ocelli. First peraeonal somite ; hind lateral corner with a lateral margin grooved along its length; schisma rounded and shallow. Second peraeonal somite with a pair of shallow teeth. Pleotelson hour-grass-shaped.

First antenna(Fig.187 C); first segment rectangular; second segment short; third segment rather long tapering toward the tip, with 5 aesthetases.

Second antenna(Fig.187 D)rather short, reaching the posterior part of the first peraeopnal somite, mutual length of first to fifth peduncular segments is 1: 2: 2 : 2 :4. Flagellum short, about half length of the fifth peduncular segment, terminal segment is twice as long as the first.

Right mandible(Fig.187 E); pars incisive 2-headed; lacinia mobilis single-toothed a hairy bristle behind lacinia mobilis; processus molaris is represented by a tuft of setae.

Left mandible(Fig.187 F); pars incisiva 2-headed; lacinia mobilis single-toothed 2 hairy bristles between lacinia and processus molaris; processus molaris is represented by a single seta.

First maxilla(Fig.187 G); endopod with 2 plumose setae; exopodite with 10 simple teeth at the tip.

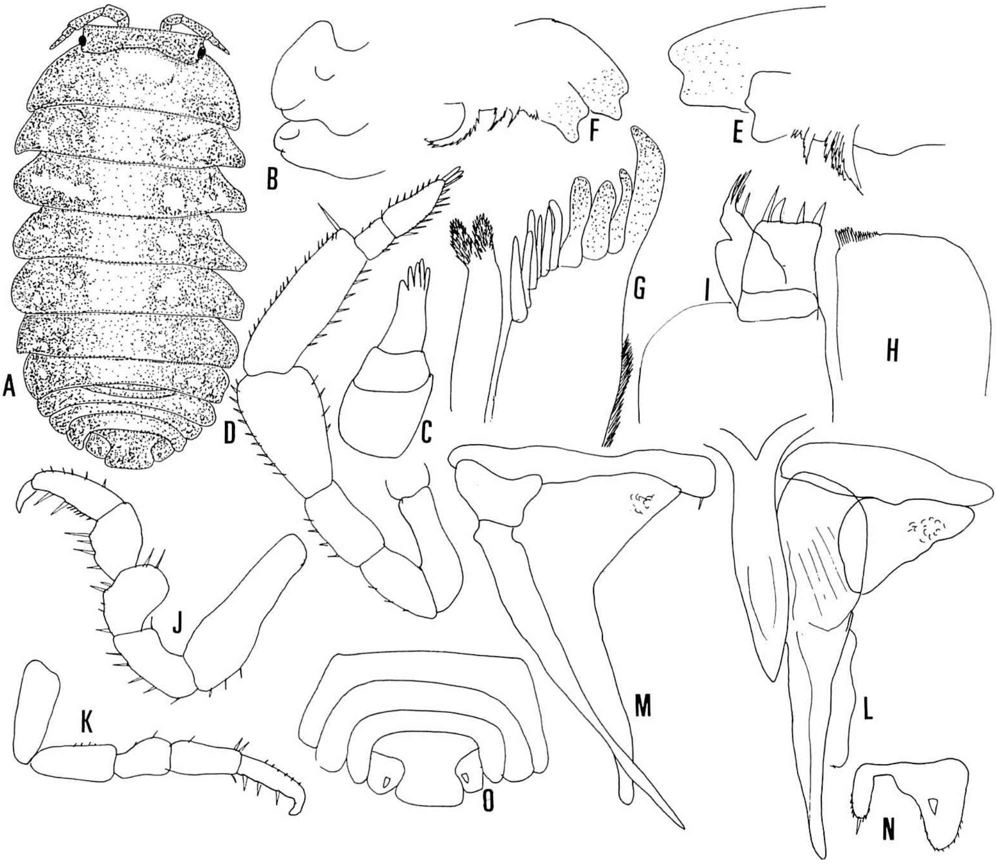

Fig.187 *Sphaerillo donanensis* n. sp.
A.Dorsal view; B. Ventral view of first and second peraeonal somite; C.First antenna; D.Second antenna; E.Right mandible; F.Left mandible; G.Outer lobe of first maxilla; H.Second maxilla; I.Maxilliped; J.First peraeopod; K.Seventh peraeopod; L.Penes and male first pleopod; M.Male second pleopod; N.Uropod (All: Holotype male).

Second maxilla(Fig.187 H)rather wide.

Maxilliped(Fig.187 I);endite rectangular with 4 spines; palp relatively short.

First peraeopod(Fig.187 J);basis oblong; ischum half length of basis; merus square with 4 setae on inner margin; propodus relatively short.

Seventh peraeopod(Fig.187 K);basis and ischium elliptical; merus 2/3 as long as ischium; carpus again as long as ischium; propodus with 3 setae on inner margin.

Penes(Fig.187 L)fusiform.

Male first pleopod(Fig.187 L); exopodite transversely long with a slight bent on the distal margin; endopodite rather narrow and straight, apical part only slightly bents outerwards and with a sinuate lappet in the medial part.

Male second pleopod(Fig.187 M); exopodite elongated; endopodite straight and very long.

Uropod(Fig.187 N) rather narrow.

Remarks: The present new species is most closely allied to *Sphaerillo hasegawai* Nunomura, reported from Bonin Islands. But the former is separated from tha latter in the following features: (1)shape of penis,(2)shape of schisma,(3)less numerous setae of peraeopods, (4)shape of exopodite of male first pleopod, and (5)more numerous aesthetascs of first antenna.

The present new species is separable from the another already known species; *Sphaerillo yonaguniensis* from Yonaguni Island by the following features; (1)black body colour;(2) shorter antennae, and (3)less numeous setae on carpus of peraeopod.

Sphaerillo oharaensis n. sp.

(Jap. name:Ohara-koshibiro-dangomushi,new)

Fig.188

Material examined: 6♂♂(1♂, holotype 5.7 mm in body length and 5♂♂ paratypes 4.0∼5.3 mm in body length) and 6♀♀(1♀ allotype, 5.3 mm in body lenght, and 5♀♀ paratypes, 4.0∼6.8mm in body length) forest of Ohara, Iriomote Island, Taketomi-cho, Yaeyama, Okinawa Pref., coll. Noboru Nunomura, July 11, 1991. Type series is deposited as follows: holotype(TOYA Cr-11230), allotype (TOYA Cr-11231)and 9 paratypes(TOYA Cr-11232∼11240) at the Toyama Science Museum, 2 paratypes(OMNH Ar-3488∼3489) at the Osaka Museum of Natural History, 2 paratypes (YCM CI-965∼966)at the Yokosuka City Museum and 2 paratypes(NSMT Cr-1488) at the National Science Museum, Tokyo.

Description: Body convex, 2.4 times as long as wide. Body colour brown with paler irregurar patterns. Cephalon rectangular, anterior line straight. Eyes mediocre in size, each eye with 14 ocelli. First peraeonal somite with a big shisma and a deep groove at the hind corner and second peraeonal somite with a tooth at hind corner. Pleotelson hour-grass-shaped; distal margin straight.

First antenna(Fig.188 C);first segment rectangular; second segment short; third segment rather long, tapering toward the tip with of 7 aesthetascs.

Second antenna(Fig.188 D)long, reaching the posterior part of the first peraeonal somite, half length of the fifth peduncular segment, terminal segment is 2.5 times as long as the first. Flagellum 2-segmented; each segment equal in length.

Right mandible(Fig.188 E); pars incisiva 2-headed; lacinia mobilis single-toothed; 2 hairy bristles behind lacinia mobilis; processus molaris is represented by a tuft of setae.

Left mandible(Fig.188 F); pars incisiva 2-headed; lacinia mobilis single-toothed; 2 hairy bristles behind lacinia mobilis ; processus molaris is represented by a tuft of setae.

First maxilla(Fig.188 G); inner lobe with 2 plumose setae; outer lobe with 10 (4+6) entire

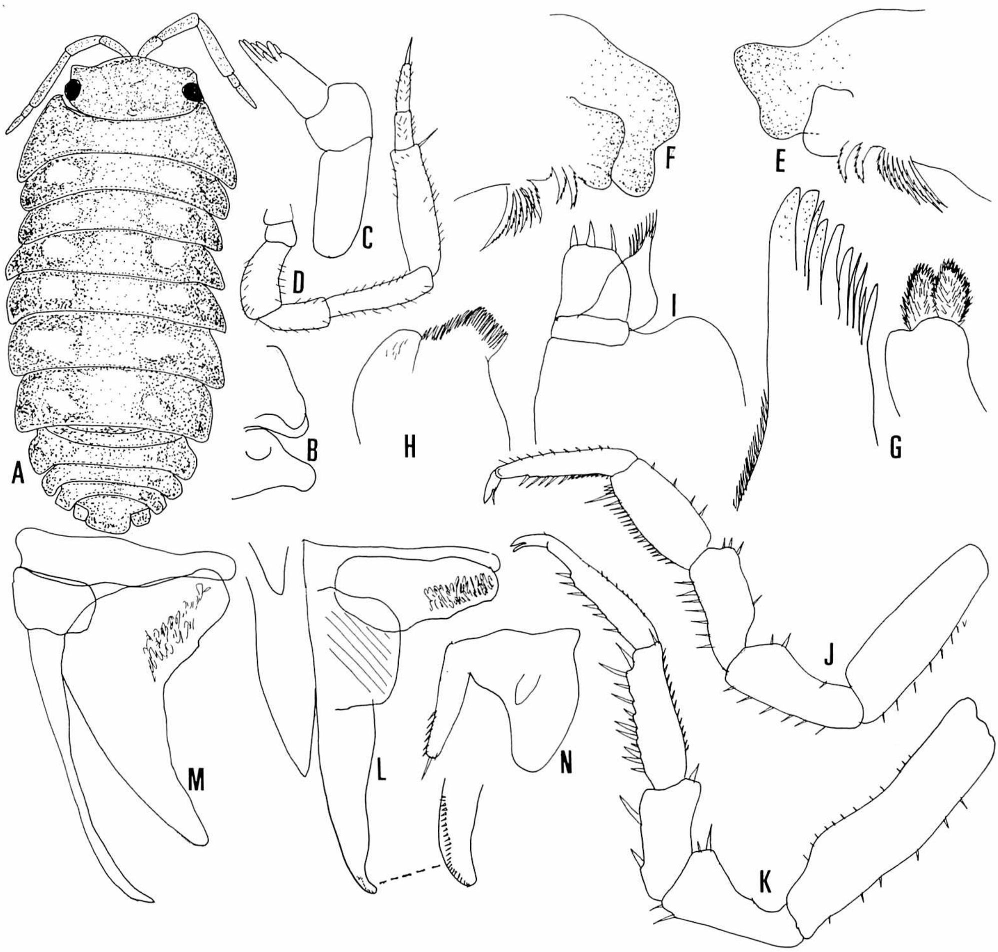

Fig.188 *Sphaerillo oharaensis* n. sp.
A.Dorsal view; B.Ventral view of first and second peraeonal somites; C.First antenna; D.Second antenna; E.Right mandible; F.Left mandible; G.Outer lobe of first maxilla; H.Second maxilla; I.Maxilliped; J.First peraeopod; K.Seventh peraeopod; L.Penes and male first pleopod; M.Male second pleopod; N.Uropod (All: Holotype male).

teeth.

Second maxilla(Fig.188 H) rather wide.

Maxilliped(Fig.188 I); endite round with 3 spines; palp rounded.

First peraeopod(Fig.188 J); basis oblong; ischium 0.8 times as long as basis; merus, carpus and propodus rectangular and subequal in length.

Seventh peraeopod(Fig.188 K);basis oblong; ischium half length of basis; merus rectangular; carpus oblong with 12 setae on inner margin; propodus oblong.

Penes(Fig.188 L)fusiform.

Male first pleopod(Fig.188 L); exopodite transversely long with a slight bent on the distal margin; endopodite rather narrow and straight, apical part only slightly bent outerwards and with a series of 30 spinules.

Male second pleopod(Fig.188 M); exopodite long; endopodite straight and rather equally extending beyond exopodite.

Uropod(Fig.188 N) normal.

Remarks:The present new species most closely allied to *Sphaerillo donanensis* already described in this paper, but differs from it in the following features:(1) bigger size,(2)longer second antenna, (3)more depressed of exopodite (exopodite) of male pleopod(4)more numerous setae on peraeopods. The present new species is separable from *Sphaeriilo iriomotensis* Nunomura, the another already known species, from the same Island by the following features: (1)more convex body, (2)longer second antenna, (3)shape of exopodite of male first pleopod, (4)shape of exopodite of male second pleopod, (5)rounded pleotelson, and(6) shape of flagellum of second antenna.

* *

In the previous paper, I mistook the name of the predatory animal of *Sphaerillo zonalis*, p16. 16, for "*Hynobius nebulosus nebulosus*„ read "*Gekko* sp.„